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The Importance of Social Relatedness Needs in Interest Development:

Applying Self-Determination Theory to the Four-Phase Model of Interest

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The Importance of Social Relatedness Needs in Interest Development:

Applying Self-Determination Theory to the Four-Phase Model of Interest

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Abstract

The Importance of Social Relatedness Needs in Interest Development: Applying Self-Determination Theory to the Four-Phase Model of Interest

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Interest is a term often associated with satisfaction and fulfillment in both career and leisure, as well as being a key factor in both formal and informal education. Although abundant literature exists related to the topic of interest, the field has been hampered by a lack of a clear definition of what *interest* means and the failure to explain how interest develops in an individual. In this paper, I review the use of the four-phase model of interest, proposed by Hidi and Renninger (2006) to describe the stages of interest development. I then propose that the internal force that propels the progression of an individual between stages of interest can be explained using the framework provided by basic needs satisfaction suggested in self-determination theory (SDT). I expand on the relationship between fulfillment of the need for social relatedness in the context of

student-teacher interactions and explain how the student-teacher relationship can be effectively utilized to promote interest development. In a conclusion section, I propose pedagogical applications of social relatedness as a vehicle for teachers to help students generate well-developed interests, before suggesting future avenues for research.

Keywords: well-developed interest, four-phase model of interest, self-determination theory, student-teacher relationships

Table of Contents

List of Tables viii

Introduction 1

Defining Interest 4

The Four Stages of Interest Development 5

Components of Interest 6

Affective features. 7

Stored value. 8

Stored knowledge 10

Characteristics of Well-developed Individual Interest 11

What Well-developed Interest is Not 11

Affect and Well-developed Interest 13

Stored Value and Well-developed Interest 14

Knowledge Acquisition and Well-developed Interest 15

A Proposal for Explaining the Progression Toward Well-developed Interest 17

Overview of Self-Determination Theory 18

The Three Basic Needs in Models of Interest 19

The three basic needs and interest development: Case study revisited. 21

Arguments against the three basic needs as drivers of interest. 24

Social Relatedness and Interest Development 28

Prior Research on Teacher-Student Social Relatedness and Interest 29

How Student-Teacher Social Relatedness Drives Interest Development 31

Promoting positive affective features. 32
Providing knowledge. 34
Modeling values. 35
Utility value. 36
Activity value (intrinsic value). 37
Attainment value. 38
Conclusions, Implications, and Future Research 40
References 43

List of Tables

Table 1: Characteristics of the four phases of interest development……7

Introduction

"The dream begins, most of the time, with a teacher who believes in you, who tugs and pushes and leads you on to the next plateau, sometimes poking you with a sharp stick called truth."--Dan Rather

According to a 2018 survey by the Boston Consulting Group, the desire for interesting work is one of the top ten global career preferences related to employee satisfaction (Strack, Booker, Kovacs-Ondrejkovic, Antebi, & Welch, 2018). People select their career and leisure activities based on what interests them, and the presence of individual interests and passions is associated with a flourishing and satisfying life (Csikszentmihalyi, 2008). Individuals who have interests in specific subjects persevere through challenges to achieve notable success, and a lack of interest in subjects is often one of the reasons students give for being disengaged from school (Fink, 1995; Larmer, Mergendoller, & Boss, 2015). Given the importance of interest for living a happy and fulfilling life, one of the goals of modern education should be to help students identify and nurture their true interests (Harackiewicz & Hulleman, 2010).

A wide variety of research studies have demonstrated the importance of interest for student engagement, knowledge acquisition, and academic achievement (Harackiewicz, Smith, & Priniski, 2016; O'Keefe & Harackiewicz, 2017; Schiefele, Krapp, & Winteler, 1992). The role of a classroom teacher is often seen as that of designing environments and facilitating interactions that provide the "trigger" that first positions an individual to engage with content that could be of interest (Harackiewicz et al., 2016). Copious pedagogical literature exists providing guidance and strategies for teachers in the classroom to "hook" students and begin the interest development process (Tomlinson, 2015).

Unfortunately, after the initial interest is "triggered," many teachers do not know how to encourage students to engage independently with content and develop their interests further.

Interest in school tends to bottom out during the early high-school years, just at the time students need to be identifying their long-term career paths (Eccles & Wigfield, 2002). Teachers often think that students categorically either have or do not have interest, but research shows that teachers and other social relationships can make a significant contribution to the development of students' academic interest (Hidi & Renninger, 2006). If interests are important components of personal and professional success, then the fact that these interests can be nurtured by teachers should engender hope in the educational profession. However, the question of exactly how this interest development occurs or what teachers should do to help promote student interests remains unresolved.

In this report, I will explore the theoretical and empirical basis for the claim that the social-relational aspects of student-teacher interactions play a fundamental role in a learner's interest development process. I will first provide an overview of the most recent model of interest and describe the components of what is meant by an internalized, personal *well-developed interest*. I will introduce self-determination theory (SDT) to propose a driving force behind interest development. I will then suggest how teachers can use social relatedness to help students make progress in their growth toward well-developed interest. My argument is developed in four major sections:

1. Clearly define the characteristics of interest, specifically the final stage of well-developed individual interest;
2. Explain how the framework of self-determination theory (SDT) can be used to understand the transition from situational to well-developed individual interest;

3. Review research on the social relatedness factor of self-determination theory in teacher-student classroom relationships;
4. Suggest avenues for future research and/or pedagogical practice pertinent to teacher-student social-relatedness as a driver for interest development.

Defining Interest

Educational psychology research has often been hampered by the lack of a clearly defined theoretical construct for interest. Over time, professionals in the field of interest have applied the term in ways that have significant overlap with other, including terms such as *attention*, *engagement*, *curiosity*, and even *motivation*.[1] Early research conceptualized interest as a relatively stable and enduring personal trait that was not easily influenced, whereas contemporary scholarship sees interest as a multidimensional variable that is influenced by both internal and external factors. In the past interest has been conceptualized as a form of *intrinsic motivation*, and seen as a core aspect of the self (Renninger, Hidi, & Krapp, 1992), but interest has now been studied as an independent construct that fluctuates over time.

The most widely accepted current definition of interest was proposed by Hidi and Renninger (2006) in their article "The Four-Phase Model of Interest Development." This model explains that interest is both a motivational variable and a psychological state that refers to an individual's predisposition to reengage with particular classes of objects, events or ideas over time. The various objects, events, and ideas related to interest are generally referred to as *content* (Hidi & Renninger, 2006). Hidi and Renninger's four-phase model conceptualized interest as malleable and developing over time from the initial "trigger" to a more long-term internalized state. Hidi and Renninger (2006) suggested that the manifestation of interest varies over time as interest develops through stages: triggered situational, maintained situational, emerging individual, and well-developed individual. I will next provide an overview of the four

[1] For a distinction between intrinsic motivation, intrinsic value, and attention see (Williams, 2018)

stages of interest development and explain how each stage is characterized by an internally or externally driven focus on affect, value, and knowledge.

THE FOUR STAGES OF INTEREST DEVELOPMENT

According to the four-stage model, interest begins to develop when something in the external environment "triggers" an individual to engage with a certain set of content. This *triggered situational interest* depends on the context and is supported by external factors. Triggered situational interest is characterized by a strong, usually positive, affective component and typically a low level of background knowledge.

If an individual continues to re-engage with the content after the initial trigger is removed, the individual is said to have entered the phase of *maintained situational interest*. In maintained situational interest, as with triggered situational interest, there are usually strong positive affective features and at least some measure of external support, but the individual begins to develop a deeper level of stored knowledge and a more internally driven tendency to engage in content related exploration.

These first two stages of interest development are both "situational." Situational interest, whether triggered or maintained, requires the presence of environmental supports. When the environment changes, situational interest often wanes. Individuals who lose situational interest no longer re-engage with the content and the interest development process stops.

In contrast to individuals who lose interest in the absence of environmental support, other individuals voluntarily choose to continue to re-engage with the content over time. These internally driven individuals are said to have transitioned from situational interest to *emerging individual interest*. In the emerging stage of individual interest, learners begin to develop a more consistently enduring tendency to re-engage with the content. Learners with emerging individual

interest make independent choices to seek out content-related activities and information. Emerging individual interest requires less environmental support and is usually not as dependent on affective motivational features.

The final stage of Hidi and Renninger's (2006) model is *well-developed individual interest*. Well-developed individual interest is an enduring predisposition to re-engage with content supported by substantial personal background knowledge and individual value placed on the content. This stage of interest development is the focus of this paper and will be explored in greater detail in later sections.

COMPONENTS OF INTEREST

In order to understand each stage of the four-phase model of interest, it can be helpful to examine the three key features of interest identified by Hidi and Renninger (2006) and to explain how these features vary in presentation across the four stages. The key features of interest are:

1. Affective features (feelings);
2. Stored value;
3. Stored knowledge.

In the following sections, I will explain each component of interest as well as the varying importance and valence of each component throughout the interest development process. Table 1, following, provides a brief summary to provide a starting context for the subsequent discussion.

Component	Phase 1: Triggered Situational Interest	Phase 2: Maintained Situational Interest	Phase 3: Emerging Individual Interest	Phase 4: Well-developed Individual Interest
Affect	Externally supported, usually positive	Externally supported, usually positive	Internally derived, externally supported	Internally derived
Stored Knowledge	Low	Medium	Medium, increasing	High
Stored Value	Low, externally derived	Medium, externally derived, introjected	High, usually internally derived	High, internalized

Table 1: *Characteristics of the four phases of interest development*

Affective features.

Hidi and Renninger's (2006) overall definition asserts that interest has both cognitive and affective components. Individuals often describe engaging with content of interest as being "enjoyable" or by using other positive valence affective terms. All forms of interest include affective components, but affect does not necessarily have to be positive in the experience of interest. Some studies have shown that even negative affect can trigger or reinforce interest (Hidi & Renninger, 2006). The interest in these studies of negative affect was of a situational nature, and participants were not followed over a longer time to determine if their situational interest matured into well-developed individual interest, so it is difficult to determine whether negative affect is related to individual interest or only situational interest (Iran-Nejad, 1987).

Some scholars have argued that interest is a basic emotion, citing the claim that feelings of enjoyment, involvement, and stimulation are seen as most typical for an interest-based activity (Krapp, 2002b). Interest involves feelings, but interest itself is not simply a feeling or transitory affective state. Although the primarily affective component of interest operates mainly at the situational interest stage, the cognitive engagement with content of interest produces an affective response and in more developed stages of interest both affective and cognitive components are involved (Hidi, 2006).

The exact specifics of how the intensity and valence of affective components of interest vary throughout the interest development process remains an open question (Renninger & Hidi, 2011). Scholars do agree that interest development always involves affective components in some way. In the four-phase model, it is the affective components that are essential for providing a trigger for later knowledge and value to develop that, in turn, contribute to individual interest (Renninger, 2000).

Stored value.

Values drive individual choice of goals and content engagement (Hulleman, Durik, Schweigert, & Harackiewicz, 2008). Affective responses result from interaction with content, but the initial decision to engage with content is often more related to finding meaning and value in that content (Hulleman et al., 2008). In Hidi and Renninger's (2000) model of interest development, *stored value* is an internally derived judgment related to the importance of content that increases as an individual moves from situational to individual interest.

Value, like interest, is a term often used but rarely clearly defined. Schwartz (1996) defined *values* as "desirable, transsituational goals, varying in importance, that serve as guiding principles in people's lives" (S. Schwartz, 1996, p. 122). The values described by Schwartz are

internally based, enduring, and appear to be relatively universal across cultures, though endorsed to varying degrees by different individual based on social and personal factors.

Although Schwartz used *values* in a noun form as enduring traits, other scholars have used *value* in the verb form to describe the amount of importance an individual places on a certain piece of content. In their "Expectancy Value Theory," Wigfield and Eccles (2000) used *value* as a verb and separated value into three different types: attainment value, intrinsic value, and utility value. *Attainment value* is the importance a person places on doing well on a specific content-related task. *Utility value* refers to the usefulness of the content within the larger framework of an individual's future plans and goals (Wigfield & Eccles, 2000).

The final component of Wigfield and Eccles's (2000) "Expectancy Value Theory" is the enjoyment one gains from doing the task itself. Wigfield and Eccles called this value component *intrinsic value* and suggested that their concept of intrinsic or value bears some relation to Hidi and Renninger's (2006) concept of interest. The term *intrinsic value* is used in a wide variety of applications in the literature and Wigfield and Eccles's formulation of intrinsic value is only one of many possible understandings of this term. For the sake of clarity, in this paper I will refrain from using the term *intrinsic value* due to the lack of consensus about the exact meaning *intrinsic*. What Wigfield & Eccles (2000) call *intrinsic task value* I will discuss as *activity value* – the personal value an individual attributes to engaging in particular activity (task).

I will use *value* in the verb form as a description of how individuals attribute importance to content. *Stored value* will be conceptualized as potentially including aspects of all three of Wigfield and Eccles's value types: attainment value, utility value, and activity (task) value.

Stored knowledge.

Stored knowledge refers to the content-related background information possessed by an individual. At the beginning of the interest development process, new knowledge is acquired from the environment. As individuals progress through the stages of interest and continue to re-engage with the content, new knowledge is acquired and individuals begin to develop a mental storehouse of content-related information. Thus, as interest develops, newly-acquired knowledge increases the total quantity stored knowledge, as well as the concurrent value placed on that knowledge.

There has been some controversy in the educational psychological literature as to whether knowledge acquisition drives interest development or if triggering interest generates the pursuit of knowledge (Schmidt & Rotgans, 2017). There is a long history of research into the relationship between individual interest and knowledge acquisition and, though a relationship has been regularly documented, the strength and direction of that relationship is at times unclear, and the research is hampered by the use of a variety of definitions and lack of consistent measurement instruments.

Regardless of whether interest develops first or whether knowledge must be acquired for interest to develop, scholars agree that early stages of interest are characterized by a low level of stored knowledge, while well-developed individual interest involves a wide-ranging knowledge base and high amount of stored knowledge. Individuals with well-developed individual interest are able to engage that stored knowledge to generate further curiosity questions aimed at seeking additional knowledge (Hidi & Renninger, 2006).

Characteristics of Well-developed Individual Interest

Well-developed individual interest is the final stage of Hidi and Renninger's (2006) four-phase model of interest development. The presence of a well-developed individual interest may result in an individual generating and seeking answers to curiosity questions while enabling the individual to anticipate subsequent steps in work with the content. Well-developed interest also usually involves a sense of meaning or value associated with growth in the domain of interest (O'Keefe & Harackiewicz, 2017).

Although the description of well-developed interest in Hidi and Renninger's (2006) model appears clear and specific, the characteristics included in its description could apply to several other interest-related terms in the literature. I will next explain how several commonly used terms are different from the concept of well-developed interest used in the four-phase model, and I will then detail the specific features of well-developed interest as conceptualized by the four-phase model.

WHAT WELL-DEVELOPED INTEREST IS NOT

One concept that is defined similarly to well-developed interest is *expertise*. According to both the Dreyfus model (1980) and Alexander's (1995) model of domain learning, expertise, like interest, develops over time through a series of stages. Early stages of developing expertise include varying amounts of situational and individual interest. The "expert" stage is characterized by a substantial knowledge base and a well-developed framework for organizing information (Alexander, Jetton, & Kulikowich, 1995; Persky & Robinson, 2017). Interest, knowledge, and experience alone are insufficient to guarantee expertise. The defining feature of experts is their ability to identify meaningful patterns and apply knowledge through progressive

problem solving. Thus, expertise can be viewed as a special form of well-developed individual interest, but not all well-developed individual interest manifests as expertise.

Curiosity is another term often used synonymously with interest in conjunction with the drive to acquire knowledge. Although *interest* refers to both a psychological state and an affective motivational disposition, *curiosity* is, at its core, defined only in relation to the desire to acquire new knowledge. Curiosity arises when an individual senses a gap in knowledge, and curiosity subsides once that knowledge gap is fulfilled (Grossnickle, 2016). Although curiosity is a transitory affective motivational state, interest is more of a persistent content-related disposition within an individual. Curiosity can drive the development of interest and the acquisition of knowledge, but curiosity is not synonymous with well-developed interest or knowledge acquisition.

Based on the affective components and meanings described in well-developed individual interest, it might seem that this final stage on the interest development spectrum is synonymous with *passion*. Vallerand (2017) argued that passion and well-developed individual interest are not identical, but that passion is a special type of interest that has become integrated with an individual's identity. According to Vallerand (2017), a person can have many interests, but only one true passion, thus all passions are well-developed individual interests, but not all well-developed individual interests are passions.

Well-developed interest has also often been used interchangeably with the term *intrinsic motivation*. Ryan and Deci (2000) used both terms *intrinsic motivation* and *interest* in their explanation of goal-driven behavior, but most recent scholarship has differentiated these two concepts. Intrinsic motivation and well-developed interest are both internally driven, and both

facilitate task involvement and enjoyment, but well-developed interest is usually related to a specific content focus whereas intrinsic motivation is a more general variable (Williams, 2018).

In this paper, I use *well-developed interest* in the narrow sense as defined by Hidi and Renninger's (2006) four-phase model of interest, which considers interest in general as a motivational variable with cognitive and affective components. In the next section, I describe well-developed interest in the context of the three key components of interest development: affect, value, and knowledge.

AFFECT AND WELL-DEVELOPED INTEREST

As in all four phases of interest, the affective components of well-developed individual interest derive from the relationship between the individual and the content focus. When an individual interacts with the content, the positive valence of the affective component, often described as enjoyment, can be part of what provides the motivating value of interest that prompts individuals to reengage with the content over time (Schiefele, 1991).

The content of well-developed interest is often associated with positive affect, but as mentioned previously individuals with well-developed individual interest do not always have to experience positive affective states like enjoyment to persist in their activities of choice (Renninger & Hidi, 2015). Although an individual with only passing situational interest might give up and choose not to re-engage with content once the affective experience turns negative, an individual with well-developed interest perseveres despite encountering challenges (Fink, 1995). The choice to continue to engage with content despite the lack of positive affective features is one of the key differentiators that marks the transition to the final stage of interest development, well-developed individual interest (Reeve, 1989).

STORED VALUE AND WELL-DEVELOPED INTEREST

At the level of well-developed individual interest, value placed on a certain type of content is internalized and can provide motivation to continue to re-engage with the content even if the specific activity is not directly of immediate interest. For example, Hidi (2000) provided a hypothetical case of an individual with a well-developed individual interest in learning the Greek language. The individual learning Greek may not experience the positive affective component of enjoyment while studying Greek grammar, but the utility and attainment value that the individual places on learning Greek provides sufficient motivation for the person to re-engage with the content (Hidi, 2000). An internally driven desire to re-engage with the content is one of the key characteristics of well-developed individual interest, and thus, well-developed individual interest depends on an individual valuing the content.

As explained earlier, Eccles et al. (1993) separated value into three types: attainment value, utility value, and activity (task/intrinsic) value. The stored value that is a distinctive feature of well-developed interest can include all three types of value. For example, when individuals perform activities that they find inherently enjoyable and fulfilling, the activity value component of well-developed individual interest creates a positive feedback mechanism that encourages continued exploration and a subsequent deepening of interest. Initial interest in a subject leads to the perception of activity value, which then promotes subsequent interest and knowledge acquisition, which then reinforces the perception of value (Hulleman et al., 2008).

Utility value can be included in well-developed interests, even though not all well-developed individual interests are linked to career and vocational aspirations. Aside from obvious career-related connections, there can be other future-related utility value for the content. O'Keefe and Harackiewicz (2017) proposed that, for individuals who set mastery goals, utility

value prompts subsequent choices to re-engage with the content, which further reinforces interest development while.

Attainment value is associated with personal identity. Individuals with well-developed individual interest can come to associate their identity with the various forms of content of interest, as when a person says they are a "gamer" as opposed to simply a person who enjoys playing video games (Grooten & Kowert, 2015). With content becomes associated with identity, attainment value of the content becomes salient and can encourage an individual to re-engage with the content, thus high attainment value becomes another key characteristic of well-developed individual interest.

KNOWLEDGE ACQUISITION AND WELL-DEVELOPED INTEREST

Situational interest can be triggered without background knowledge as new information is acquired from the environment, but well-developed individual interest requires a substantial stored knowledge base. Hidi and Renninger (2006) pointed out that the knowledge requirement of well-developed interest could be disconfirmed only if an instance of well-developed interest emerging without substantial accumulation of knowledge could be identified. As yet, no such example has been documented.

Individuals with well-developed individual interest have sufficient background knowledge to allow them to generate curiosity related questions for seeking additional knowledge. Identifying knowledge gaps and engaging in progressive problem solving is one way in which individuals with well-developed individual interests can specialize in a particular content area and become experts in that field (Persky & Robinson, 2017). Well-developed individual interest thus motivates the acquisition of additional knowledge.

The pedagogical literature consistently references the importance of appealing to individual interests to encourage students' academic achievement and knowledge acquisition. Teachers are encouraged to differentiate instruction based on student interests to motivate students to seek additional knowledge related to those interests (Tomlinson, 2015). The recent push toward project-based learning (PBL) is largely based on the ability of projects to appeal to student interests as a motivator for gathering information needed (Larmer et al., 2015).

A Proposal for Explaining the Progression Toward Well-developed Interest

In the four-phase model of interest development, Hidi and Renninger (2006) used an example of a person in a waiting room to illustrate the progression through the various phases of interest.

> When a person who picks up a magazine in a waiting room fixates on an article about which he or she knows very little, his or her interest has been triggered by the situation…..If the person who picks up the magazine recognizes the relevance of the article to a topic that he or she has been trying to understand for some time and feels a surge of excitement, this person can also be said to have an individual interest for that topic (p. 116)

Exactly how the triggered situational interest activated by the magazine transforms into individual interest through the stages of the interest development model remains a matter under investigation. In their 2011 article "Revisiting the Conceptualization, Measurement and Generation of Interest," Renninger and Hidi suggested that an important next step for further studying their model should be addressing the question of how movement between phases of interest occurs.

In the long history of interest research, many scholars have proposed that the desire to maintain or experience positive affect drives the tendency to re-engage with content of interest. However, humans also choose to engage with content that may not be immediately pleasant for the sake of achieving a larger goal. As in the Greek language learning example used earlier, individuals with well-developed individual interest will undertake activities that do not immediately produce positive affect. Positive affect alone cannot explain the transition from situational to well-developed individual interest.

Krapp (2002a) argued that researchers should consider the concept of basic needs satisfaction as a means for explaining the drive through interest development. Krapp stated that

"the emotional characteristics of an interest-based action would be experienced positively because the action satisfies basic needs" (p. 414). This reciprocal relationship between interest development and needs satisfaction provides a bridge to explain the progression between states of interest as well as giving a hopeful framework through with teachers and other individuals can encourage interest development for learners (Beh, Pedell, & Doube, 2015; Lynch, 2017). In the next section, I provide an overview of the three basic needs derived from self-determination theory (SDT) and then detail how the drive to satisfy these needs can help explain the development of interest.

OVERVIEW OF SELF-DETERMINATION THEORY

Self-determination theory (SDT) is a meta-theory that combines several different schools of thought related to human motivation. In their development of self-determination theory, Ryan and Deci (2000) suggested that motivation can be conceptualized as a continuum from amotivation (absence of motivation) through extrinsic (externally derived motivation) to fully internalized intrinsic motivation. Deci (992) suggests that interest is a form of intrinsic motivation, but fails to explain how interest develops. Self-determination theory uses the innate desire to satisfy three basic needs - the need for autonomy, the need for competence, and the need for social-relatedness - explains the internal motivating factors that drive human psychological growth and development. These same three basic needs can be used to explain the development of interest through the four stages of Hidi and Renninger's (2000) model.

The first of the three basic needs of SDT, *competence*, also called *effectance* describes an individual's experience of having mastery over activities or the environment. Competence is often associated with the growth of knowledge or skills. In an educational setting, developing mastery goals for high level proficiency in certain skills and knowledge is often described as

driven by the need to fulfill competence needs. In contrast, the use of performance goals related to accomplishing specific actions in order to be perceived as better than (or not worse than) one's peers contributes to overall academic achievement motivation but does so in a different way than would a mastery orientation or long term content valuing and feelings of competence (Hulleman et al., 2008).

The next basic need, *autonomy,* refers to an individual's ability to make independent decisions and act in accord with their personal values. Ryan and Deci (2017) described autonomy as "the organismic desire to self-organize experience and behavior…. concordant to one's integrated sense of self" (pp. 10-11). The trend toward personalized learning in education demonstrates how educators are recognizing the importance of autonomy for learning and providing opportunities for students to choose place, pace, or path of learning experiences independently (Hanover Research, 2014).

The last of the three needs in SDT is *social relatedness.* Social relatedness describes the human desire to feel connected to others, to love and be loved and to give and receive care. Humans are social animals, and, at the core level, teaching is a social relational profession as least as much as, or maybe more than, an intellectual one (Grossman & McDonald, 2008; Immordino-Yang & Damasio, 2007).

THE THREE BASIC NEEDS IN MODELS OF INTEREST

There are many theories that apply the concept of needs satisfaction to the development of interest, but one common factor is that all point to interest as a relationship between an individual and the environment (Renninger et al., 1992). For example, According to Person Object Interaction Theory (POI), interest development is the result of a relationship between an individual and a piece of content in the context of an environment. POI focuses on the emotional

characteristics of interest in isolation from content knowledge structures and value judgments. POI suggests that individuals choose to re-engage with content and develop interests because interactions with content satisfy the individual's basic needs and provide the optimal level of emotional arousal. In other words, in POI, interest is the outcome of the satisfaction of needs (Krapp, 2002a).

Although Hidi and Renninger (2006) developed these ideas of interest as an interaction between content and environment into their four-phase model of interest, in the four-phase model, interest and needs satisfaction have a reciprocal relationship instead of describing a one-way path from needs satisfaction to interest. In other words, interest is not an outcome of needs satisfaction but a psychological state that is maintained by continued re-engagement with content. In the four-phase model, interest is related to knowledge and value as well as affect, whereas in the POI framework, the satisfaction of basic needs is the only determinant of interest (Hidi & Renninger, 2006).

Even though, as Hidi and Renninger (2006) asserted, interest development is likely more complex than solely the satisfaction of basic needs, I argue that the drive to meet basic needs can be used as a framework for understanding and explaining the developmental progression of interest. To illustrate how self-determination theory's framework of needs satisfaction drives the development of interest, it is helpful to revisit the case study used earlier, which Renninger and Hidi (2015) expanded in a later article:

> Julia is in her last term of college. While nervously waiting for a medical appointment, she picks up and flips through a magazine. Her attention is drawn to an article about a man who is an engineer and who recently gave up his partnership in a successful consulting practice to become a facilitator. A facilitator is a person who tries to help people or groups resolve conflicts before they go to litigation. Julia likes the idea of working with people and wants to read more even though she has never heard of the occupation of facilitator before now. Meanwhile, she is called to meet the doctor. She

> carefully marks the page she is reading then leaves the magazine on the table. Following her appointment, she goes back to the table, finds the magazine, and sits down to finish reading the article…. once she returns to reading the article, Julia makes notes and decides to follow up on what she has read. She makes plans to go to the library, search the internet, and talk to her advisor about her options. (p. 10).

Renninger and Hidi (2015) explained that Julia's continued re-engagement with the content show that she has developed an individual interest that, if characterized by continued effort to learn about facilitation, positive feelings about facilitation, and increased value for facilitation, would be indicative of a well-developed individual interest.

Although the notes on the case study clearly describe Julia's actions, knowledge, and feelings, they fail to explain why these actions, knowledge, and feelings followed from Julia's initial interest "triggered" by the magazine. Self-determination theory would suggest that Julia's actions were the result of a need to develop competence, demonstrate autonomy, and create opportunities for social relatedness and that the drive to satisfy these basic needs provided the motive power for her progression from situational to well-developed individual interest.

The three basic needs and interest development: Case study revisited.

Julia's interest was triggered by her exposure to the magazine article. The magazine's text features, surprising information, or personal relevance could have been prompts for the initial situational interest (Hidi & Renninger, 2006). When Julia chose to continue to engage with the article, her need for autonomy was satisfied as she made an independent choice. Autonomy and choice have both been positively correlated with the development of interest (Tomlinson, 2015). The experience of autonomy and the features of the article both contributed to Julia's positive affective experience when reading the article.

As Julia read, she accumulated knowledge, thereby allowing for the satisfaction of her need for competence. As Julia's knowledge about the profession of facilitation increased, her

knowledge and thus her feelings of competence increased. Competence feelings are associated with the growth of a knowledge base and with increased value placed on the knowledge gained (Renninger, 2000). With her increased knowledge and autonomous choices to re-engage, Julia entered the phase of maintained situational interest. Further, Julia made a personal connection with the information from the article in that she, like the facilitator profiled, liked working with people. Julia's personal connection helped satisfy her need for social relatedness, further encouraging her toward emerging individual interest.

When Julia returned to the article after her doctor's appointment, she again made an autonomous choice, experienced feelings of competence as she learned more, and discovered the possibility for social relatedness in her future career. Julia's three basic needs were all satisfied as her interest developed, and, reciprocally, her developing interest satisfied her basic needs.

The description of basic needs fulfillment and Julia's interest develop might seem self-evident, so it is useful also to consider how the disruption of basic needs satisfaction could have thwarted Julia's interest development. Suppose that, instead of spontaneously choosing to read the magazine article while waiting for the doctor, Julia had been assigned the reading as a part of one of her college classes. When deprived of the autonomous choice of her reading material, Julia might have approached the article with a negative affect of resentment, in which case her she might have read the article as required. However, without the positive affect related to autonomy, her interest would not have been triggered.

If, as Julia was reading, the facilitator described in the article was described as a one-in-a-million super genius, Julia might not have felt that she was competent to be a facilitator. The information in the article could have made Julia believe that a career as a facilitator would not make her feel competent, so she would have put the article down and not chosen to continue

reading after her appointment. Lacking satisfaction of the basic need for competence, Julia would have no motivation to continue to seek the knowledge needed for progressing toward a well-developed individual interest. Julia also might not have felt connected to the super-genius facilitators and so wound not have experiences the satisfaction of her social-relatedness needs.

When Julia's need for competence was satisfied, she associated the article with being of interest to her. This began another reciprocal cycle in which needs fulfillment drove interest development, and developing interest continued to satisfy needs. When individuals engage in activities that they find "interesting," they are likely to develop competence in those areas. The increasing competence promotes feelings of enjoyment (positive affect) that then reinforces the experience and drives those individuals to continue to engage in the activity (Deci & Ryan, 2000). A desire to re-engage with specific content is a characteristic of well-developed individual interest, so the positive affect associated with increasing competence helps further reinforce the depth of well-developed individual interest.

When reading the article, Julia learns that a facilitator helps people resolve conflicts, and she feels a personal connection with the career because she "likes the idea of working with people." If, instead of "working with people," facilitators were described as "being familiar with the intricacies of the legal system," Julia might not have felt an initial connection that met her social-relatedness need. If Julia did not feel that being a facilitator might generate opportunities for social relatedness, she would not have experienced positive affect when reading the article and not have been motivated to seek out further knowledge and develop her interests.

The drive for needs satisfaction proposed by SDT may thus provide an explanation for the motivational factor that powers interest development through the four phases of interest development. In the framework of SDT, instead of simply being motivated to learn, Julia's re-

engagement with content indicates the satisfaction of her needs. As Julia engages with the content, she begins to develop a relationship with that content characterized by the content's ability to meet her basic needs. The satisfying relationship with the content is then experienced by Julia as the psychological state and motivational variable of interest.

Describing Julia's developing interest as related to the satisfaction of needs provides a richer and more satisfying explanatory model than simply using broad term *motivation*. The need satisfaction framework also may be useful in explaining why some individuals fail to develop interest in the same content. If the content does not satisfy the individual's needs for competence, autonomy, or social relatedness, that individual would not re-engage to develop a relationship with the content and thus fail to develop interest (Ryan & Powelson, 2014).

Arguments against the three basic needs as drivers of interest.

Hidi and Renninger (2006) articulated that identifying the conditions that encourage individuals to continue to develop interest constitutes the next "critical set" for interest research, especially in educational settings. As shown in the case study above, the application of self-determination theory's three basic needs can be used to explain the progression of interest from "triggered" to well-developed. To justify the application of self-determination theory as an explanatory driving factor in the development of interest, it is important also to consider, and possibly rule out, other motivational constructs as potential contributors to the interest development process.

For example, one might argue in examining the Julia example described above that she was *intrinsically motivated* to learn about facilitation instead of describing her actions as being indicative of interest development. This argument would originate in the lack of clear definitions of terms. As explained earlier, the current most widely accepted definition of *interest* states that

interest is a *motivational variable* that refers to "the psychological state of engaging or the predisposition to engage with particular … content" (Hidi & Renninger, 2006). If interest is a motivational variable, there must be some factor controlling this motivation in a way that generates the predisposition to engage. I argue that the driving factor for engagement is the requirement to satisfy SDT's three basic needs.

When individuals experience needs satisfaction, their physical and psychological drives re-enter a state of equilibrium, and they no longer experience a drive to seek out resources to meet those needs. If individuals stop engaging with content after needs are satisfied, how could the drive to satisfy basic needs be used to explain a psychological state such as interest that is characterized by the predisposition to re-engage with content regularly over time? Renninger and Hidi (2015) explained that interest is a relationship with content, not simply passive engagement. Individuals continue to seek out content-related activities and information because the they remember the satisfaction of past experiences and desire to repeat those experiences over time (Deci & Ryan, 2000). Satisfaction is a momentary state, never permanent, so individuals with well-developed interest must re-engage with the content to continue satisfying their needs.

The choice of leisure activities provides a clear demonstration of the choice to re-engage with content in the absence of an immediate drive for needs satisfaction. A study by Giu, Kono, and Walker (2019) found that participation in leisure activities, what the four-phase model of interest would call re-engagement with content of well-developed interest, was associated with greater positive affect. Along with stored knowledge and stored value, internally generated positive affect is one of the characteristics of well-developed leisure activities, and thus, leisure activity choice could be indicative of the presence of well-developed interest. Participating in

these leisure activities satisfies the needs for autonomy, competence, and social relatedness, thus further supporting the idea that satisfaction of basic needs is one of the primary drivers of interest development.

As a final critique of a needs-based explanation of interest development, consider the work of Rotgans and Schmidt (2017) who suggested that interest is developed not through needs satisfaction but through knowledge acquisition. In proposing their "Epistemic Model of Interest in Education," Schmidt and Rotgans (2017) suggested that acquiring knowledge helps an individual identify an information gap that then drives the person to gather more knowledge in a process that then results in interest development. I would argue that knowledge acquisition is analogous to the satisfaction of the need for competence. Individuals rarely gather information for its own sake, but instead seek knowledge in order to increase feelings of competence in a given field of interest.

Thus, neither *intrinsic motivation* nor knowledge acquisition provides a complete explanation for the continued engagement with content that is the hallmark of well-developed individual interest. It would seem that an important addition to explaining the behaviors of individuals with well-developed interest is a consideration of the continuing quest for maintaining self-determination theory's three basic needs. If the three basic needs of self-determination theory are useful as a framework for understanding the progression toward well-developed interest, how, then, can educators apply that framework to help move students from situational interests "triggered" by classroom environments to well-developed individual interests?

Deci and Ryan (2000) suggested that all three needs – autonomy, competence, and social relatedness – must be satisfied for psychological health. Satisfaction of only one or two needs is

insufficient. The majority of interventions investigated for increasing student interest have focused on increasing student perceived autonomy and competence, especially with relation to feelings of self-efficacy and drive for mastery (Brown, Concannon, Marx, Donaldson, & Black, 2016; Minnaert, Boekaerts, de Brabander, & Opdenakker, 2011; Niemiec & Ryan, 2009). In the next section of this paper, I suggest that focusing on the need for social relatedness and the student-teacher relationship could provide the missing link to helping students develop enduring individual interests.

Social Relatedness and Interest Development

Hidi and Renninger (2006) positioned the four-phase model of interest development as an essential tool for educators in helping students develop interest. They ended their article with a section on practical applications about how the ideas of the four-phase model can be used by teachers, with such suggestions as providing external support during initial involvement, creating opportunities for students to ask curiosity questions, and creating resources that promote engagement with problem solving.

Providing external support, encouraging curiosity questions, and creating resources are all external, environmental factors that are best situated to "catch" or trigger students' initial situational interest. These environmental design features of teaching focus primarily on the affect and knowledge components of interest. Providing external support helps students feel successful in learning and promotes positive affect. Encouraging curiosity questions promotes knowledge acquisition and feelings of competence. Creating resources that are fun or engaging promotes both positive affect and knowledge acquisition.

Unfortunately, all of these teacher interventions occur in the classroom environment only. According to the four-phase model of interest, when the environment no longer supports situational interest, interest wanes and fails to progress into the later stages of emerging or well-developed individual interest. Thus, even in the best designed classrooms where students are "interested," that interest can fail to develop beyond its initial phases in the absence of environmental supports (Springer, Harris, & Dole, 2017). Research has empirically demonstrated this failure of classroom supports to translate into individual interests, as students, especially in the adolescent years, report experiencing situational interest in school, but not

individual interest in those same subjects at a later time outside the classroom (Rotgans & Schmidt, 2018).

In a previous section of this paper, I suggested that the drive to satisfy three basic needs identified by self-determination theory - autonomy, competence, and social relatedness - could provide the motive power needed to move through the four-phases of interest development. The need for autonomy and competence can be satisfied by classroom design factors, but such factors may not persist outside the classroom environment. If one of the goals of education is to encourage students to develop lifelong interests, then providing external classroom supports that trigger interest without also considering factors that could help that interest develop does not serve students well (Harackiewicz & Hulleman, 2010).

In the next section I provide an overview of past research related to student-teacher relationships. I will then explain how the ability of teachers to meet students' needs for social relatedness can provide a key to helping students transform situational interests into well-developed individual interests.

PRIOR RESEARCH ON TEACHER-STUDENT SOCIAL RELATEDNESS AND INTEREST

Although the process of education is sometimes seen as simply the acquisition of skills and knowledge, teaching is, in many ways more of a relational than cognitive act (Grossman & McDonald, 2008). Scholars from Bandura (1971) to Vygotsky (1978) and earlier have emphasized the social aspects of learning. The bond between a student and a teacher can be as important as that of the student with their primary caregiver or, in the absence of a stable home environment, the student-teacher bond can substitute for caregiver attachment (Akioka & Gilmore, 2013).

Research suggests that student-teacher relationships are important for learning, but the question remains open as to how the ability of teachers to meet students' need for social relatedness is connected to interest. In one study on social relatedness and interest, Minnaert, Boekaerts, de Brabander, and Opdenakker (2011) found that the failure to develop interest in an academic project was related to the lack of the satisfaction of basic psychological needs. Closer examination of the assessments used for measurement in this study show that the social relatedness factors included in the analysis were more related to peer-to-peer interactions than student-teacher interactions. Despite the difference in relationship type focus, Minnaert et. al (2011) did determine that feelings of positive social relatedness needs satisfaction increased student interest over time, especially during later stages of the interest development process. More recent research has shown that student-teacher relationships have a greater impact on the generation of interest than student-peer relationships (Fedesco, Bonem, Wang, & Henares, 2019)

Other research on student-teacher relationships has not directly focused on the influence of this relationship on interest development. Some research has examined student perceptions of autonomy support from teachers, though not specifically social relatedness aspects of teacher-student interactions (Ahn, 2014; Akioka & Gilmore, 2013; Niemiec & Ryan, 2009). Often, studies that claim to be examining "student interest" and teacher social relatedness factors actually have achievement, positive affect, or a more open-ended concept of "engagement" as their dependent variables (Cox, Duncheon, & McDavid, 2009; Furrer, Skinner, & Pitzer, 2014; Royer, 2008; Sauer, 2012; Wentzel, 1998).

Additional research has focused on how perceptions of similarities between students and teachers in terms of culture and gender help generate feelings of social relatedness. Male students of male teachers were more likely to report feeling that their teacher was a "role model"

and were more likely to approach the teacher with concerns about academics and bullying (Gosse, 2011). Unfortunately, little research exists to explain how cultural, gender, or racial similarities between students and teachers are related to student interest development or achievement.

Research examining academic interest in general provide some insight into the possible importance of student-teacher relationships. For example, several studies have found a decline in interest in academic subjects that is especially notable in the early adolescent years (Watt, 2004). Although the adolescent years are filled with changes, one change that is consistent for adolescents in the American education system is a change in the instructional environment in schools. Adolescents begin attending larger classes with a wide variety of teachers, as opposed to their earlier academic experiences that usually took place in single teacher classrooms. As adolescents move into the less intimate settings of middle and high school, there is a decline in the quality of student-teacher relationships that occurs simultaneously with documented declines in student interest (Dietrich, Dicke, Kracke, & Noack, 2015).

HOW STUDENT-TEACHER SOCIAL RELATEDNESS DRIVES INTEREST DEVELOPMENT

As individuals choose to re-engage with content over time, they begin to develop increasing knowledge of and value for the content. Learners begin to generate their own questions as interest becomes more internally focused. As learners progress from emerging to well-developed individual interest, they may experience challenges and may need encouragement from others to persevere when confronted with difficulties (Hidi & Renninger, 2006).

Although the four-phase model of interest describes well-developed as being mostly internally generated, the presence of external supports such as models, teachers, or peers, can be

helpful in maintaining interest and preventing regression to earlier stages or even extinction of the content interest altogether. Positive affect, stored value, and stored knowledge in isolation are not sufficient to move learners from triggered situational to well-developed interest. Instead, external support, especially social support, is necessary. In the following section I will explain how social relatedness, specifically in the context of student-teacher relationships, can help learners to progress from situational to well-developed individual interest.

Promoting positive affective features.

The most readily observable effect of student-teacher relationships on interest is the potential for development of positive affect. Humans are social creatures, and feeling cared for, as well as providing care for others, are strongly associated with positive emotions (Furrer et al., 2014; Immordino-Yang & Damasio, 2007). As described in the previous sections, positive affective experiences are one of the drivers of interest development, so relationships in and of themselves can help promote the progression towards well-developed interest. The relationship between students and teachers has additional features that can help interest to mature beyond "triggered" situational to well-developed individual interests.

In a study examining the effects of perceived teacher-relatedness in physical education, Cox et. al. (2009) found that stronger feelings of social-relatedness with both teachers and peers were related to feelings of enjoyment (positive affect) as well as increased self-determined motivation. Cox et. al. (2019) conceptualized motivation as a broader variable inclusive of student interest, which means that the study's findings demonstrated a relationship not only between better student-teacher social relationships and positive affect, but also correlations between these two variables and interest.

Lazarides, Gaspard, and Dicke (2019) examined the general phenomenon of "teacher support" to determine how perceptions of teacher support were related to student enjoyment in the mathematics classroom. In this study, *teacher support* was defined as inclusive of positive student-teacher relatedness, but also included the teacher's construction of a classroom environment where material was delivered at an appropriate pace and error corrections were constructive and positive. The authors found that student perceptions of positive teacher relationships as well as teacher enthusiasm were strongly related to increased positive affect and enjoyment. This positive affect was then correlated with greater motivation toward and interest in mathematics.

Another way that students can experience positive affect in the context of social relatedness with their teachers is through dialogue. When student-teacher dialogue resulted in students feeling cared for by the teacher, students felt more confident and thus likely experienced positive affect when engaging in the relationship (Kim & Schallert, 2011). Experiences of positive affect encourage individuals to re-engage with content in a way that helps drive interest development. Thus, positive student-teacher dialogue can also help interests develop. Perceptions of teacher warmth also contribute to positive social relationships, further encouraging student engagement (Sandilos, Rimm-Kaufman, & Cohen, 2017).

Anecdotally, when individuals are asked about teachers that most impacted their education and interests, they describe teachers who were "passionate" or "enthusiastic" about their topics. Empirical studies have validated this informal observation, and teachers' emotional experience and expression, independent of relationship quality, has been shown to be related to student interest. It is possible that the emotional contagion effect, in which the emotions of an

individual generates similar emotions in another explain why teacher enthusiasm results in students feeling more engaged and interested during class (Lazarides, Gaspard, & Dicke, 2019).

Providing knowledge.

Students who experience positive affect in their relationships with teachers are more likely to engage with classroom material, and engagement with classroom material contributes to the accumulation of additional content related knowledge (Hidi, 2000). A significant body of stored knowledge is one component of well-developed individual interest, and so, facilitating knowledge acquisition is another way that strong student-teacher social relatedness can contribute to the progression toward well-developed interest.

As a learner transitions from situational to individual interest, the learner begins to self-generate curiosity questions that must be answered to fill a knowledge gap. Ryan and Deci (2016) asserted that feelings of relational security are necessary for curiosity and intrinsic motivation. Without strong student-teacher social relatedness, learners might not have the perseverance to answer curiosity questions that relate to the content for interest development. In fact, the absence of strong social relatedness features could contribute to the decrease or extinction of interest entirely (Hidi & Renninger, 2006).

In addition to providing emotional support that encourages interest development, teachers can also create environments that foster emerging interests. In describing their conceptualization of interest, Hidi and Renninger (2006) asserted that "the potential for interest is in the person but the content and the environment define the direction of interest and contribute to its development" (p. 112). Teachers must have positive social relations with their students in order to identify emerging individual interests that could be nurtured by classroom environment through activities, models, or other opportunities (Renninger, 2000). Students who have positive

social relations with teachers are more likely to engage with the content provided, and so student-teacher social relatedness creates a virtuous cycle in which opportunities to engage with content provided by the teacher are used by the student to increase knowledge.

Positive student-teacher social relations help teachers to identify emerging interests in students. Teachers can do little to influence the interests that students have when they enter their class, but by spending time getting to know the students and their interests, teachers can provide activities high in situational interest that can help students to re-engage with the content in a way that promotes movement toward well-developed individual interests by the end of the school year (Mitchell, 1993).

Modeling values.

Although the importance of positive affect and knowledge acquisition are frequently identified in the pedagogical literature as factors for the development of student interest, the role of values is underexplored. Unlike other social roles, that of the teacher often comes with expectations of sharing and teaching values (O'Keefe & Harackiewicz, 2017). As discussed earlier, *values* in the noun form refers to universal beliefs that are relatively enduring over time. These internalized values are often developed early in life and depend on socialization factors such as interactions with family, peers, and teachers (Döring, Daniel, & Knafo-Noam, 2016).

Although these generalized, universal values likely do play a role in the development of individual interests, the attribution of value to particular content that is associated with the progression toward well-developed interest can change over time, and most studies show that personal, universal values are fairly consistent over the lifespan (S. H. Schwartz et al., 2012). The changing valuation of content associated with development of interest is better explained by

the active attribution of worth - attainment value, utility value, and activity (intrinsic) value (Wigfield & Eccles, 2000).

Utility value and attainment value are responsive to environmental change. The amount of stored value for content increases as individuals move through the four phases of interest development. Value attributions occur at the personal level, but are strongly influenced by social interactions, especially those with role models and respected others such as teachers (O'Keefe & Harackiewicz, 2017).

Teacher-directed interventions have been shown to be effective in helping increase each of these three types of value attributions. Increasing value contributes to increasing interest, but students who do not feel cared for by teachers or do not trust their teachers do not have their social relatedness needs met and therefore cannot adequately engage and benefit from the interventions (Furrer et al., 2014). Recent research suggests that the strength of perceived social relatedness needs satisfaction between students and their teachers might have a moderating effect on the impact of interest interventions (Fedesco et al., 2019).

A full review of research on values interventions and student interest is beyond the scope of this paper, but the following sections will detail a few representative studies showing how teachers, through their social-relatedness with students, can help increase content value that is associated with interest development.

Utility value.

Utility value is the importance a person places on engaging with content based on beliefs about how useful that content will be in the future. Utility value is less directly connected to the social relatedness aspects of teacher interventions than attainment value or activity value, but

teacher interventions that emphasize the utility value of content are effective for increasing student interest (Harackiewicz & Hulleman, 2010; Renninger & Hidi, 2015).

Teachers also serve as role models, and students have been shown to mirror the utility value attributions given to content by their teachers. For example, Williams and Weiss (2018) found that physical education students whose teachers and parents espoused high utility value for physical education showed greater value attributions and interest for physical education at the end of a physical education course than those students who did not have teachers and parents with high utility value for physical education. Without the social influence of teachers and parents, the students would likely have failed to attribute increased utility value to physical education and thus would not have moved along the interest spectrum toward well-developed individual interests.

Activity value (intrinsic value).

As explained earlier, activity value, is the enjoyment one gains from doing a task or engaging with content. Activity value is strongly associated with expectations of positive affective experiences such as enjoyment or satisfaction. A teacher's activity value for content is often reflected in that teacher's enthusiasm in instruction. Humans pick up on and mirror the emotions of others around them, a phenomenon known as *emotional contagion*, and thus, a teacher's enthusiasm can contribute to a student's feelings of content-related task value (Lazarides et al., 2019).

In addition to emphasizing the value of classroom activities, teachers can also use social factors to encourage secondary activity value. For example, sometimes students who have positive social relations with teachers choose to engage in class activities, such as solving a physics problem, simply because the student wants the teacher to be pleased. The desire to

maintain positive social relatedness with the teacher thus imbues the content with activity value, even though the student might not yet have developed an internalized value for the content in itself (Immordino-Yang, 2011).

Individuals tend to attribute greater value to tasks that are associated with other individuals whom they admire, such as role models (Gaspard et al., 2015). When teachers are seen as role models, students are more likely to place higher task value on content associated with that teacher's course and later to cite the teacher as a role model and as a source of content-associated activity value (Lockwood & Kunda, 1997). When asked about why they choose to re-engage with content related to their major, college graduates often cite the activity value demonstrated by a teacher's passion or enthusiasm as providing them with inspiration for their initial interest (Quinlan, 2016).

Attainment value.

Wigfield and Eccles (2000) conceptualized *attainment value* as the importance an individual places on successful completion of a task. Thus, *attainment value* is connected to self-concept and personal identity in a way that is similar to the concept of personal values used in colloquial language. Whereas utility value and task value are related to student perceptions of the content, attainment value attributions are fundamentally intertwined with students' perceptions of themselves as learners and thus are more likely to be influenced by social factors that drive identity development.

Well-developed interest is internalized and associated with identity. The study of identity development has been of interest since the early days of psychology, most notably in Erickson (1950) and Marcia (1960). Identity development is a complex process involving both interpersonal and intrapersonal factors. Though the impacts of identity on decision making and

performance have been studied (Oyserman, 2009), there is as of yet no general, universally accepted, theory of identity development nor is the impact of culture and environment on identity fully understood. Yet, scholars do agree that social factors and role models are key components of how identity is shaped. When teachers serve as role models, they can help students shape their identity in such a way that a particular set of content is important to that identity (Gaspard et al., 2015).

When students connect content with their identity and personal development, that content becomes associated with a higher attainment value, thereby encouraging students to re-engage with the content. Thus, by helping students associate content with their identity, teachers can use their social influence to help further drive the progression toward well-developed interest.

Conclusions, Implications, and Future Research

My research and writing in relation to interest has been conducted through my personal lens as a classroom teacher. As with many other teachers in the American education system, I feel pressure to help my students achieve prescribed academic objectives and score well on standardized assessments. Although I agree that equipping all students with a foundation of essential knowledge is important, I have witnessed first-hand how a content-focused, narrow curriculum often fails to engage students and leads to dissatisfaction and alienation in school.

Meeting students' needs for social relatedness provides a force for driving student interest development, developing interest leads to exploration and content engagement, and engagement and exploration lead to achievement. If achievement is one of the goals of the education system, meeting the need for social relatedness helps accomplish that measurable goal by providing a satisfaction of the students' needs of autonomy, competence, and social relatedness. But, if the more lifelong goal of developing students into lifelong learners is the true objective of education, than nurturing student interests makes the social relatedness factor of teaching an even more essential aspect of daily educational practice.

In the final section of their article on the four phases of interest development, Hidi and Renninger (2006) suggested that a crucial practical application of their work will be to identify conditions that lead students of all ages to sustain and develop their interest across the various phases of development. The intersection between social relatedness and interest development provides a novel venue for teachers working within the constraints of the education system to help students build more than just knowledge. By focusing on relationship building, teachers can help students have positive affective experiences in school, engage in personal explorations for deeper content knowledge, and develop value for content related tasks.

In the field of education, as in many areas of scholarship, ideas ebb and wane in popularity over time. The current focus of the educational system is on acquisition of knowledge and skills, but earlier theorists such as Herbart (1891), Dewey (1925), and Vygotsky (1978) all emphasized the importance of interest and social relationships for successful knowledge acquisition. Even B. F. Skinner, the paragon of behaviorism, realized the importance of social-relational aspects in teaching. When explaining the purpose of his teaching machine, Skinner (Skinner, 1954) asserted, "the teacher has a more important function than to say right or wrong…. there is more important work to be done – in which the teacher's relations to the pupil cannot be duplicated by a mechanical device. Instrumental help would merely improve these relations" (p. 96).

In this paper, I have described the current view of interest development and its essential components: affect, value, and knowledge. I then detailed how each of these three components present in the highest phase of interest, well-developed interest. I explained how the drive toward satisfaction of basic needs suggested by self-determination theory can provide a framework for explaining the progression through the four phases of interest development. Finally, I focused on how social relatedness, specifically in the context of student-teacher relationships, can provide a mechanism for helping learners progress toward well-developed interest.

In order to accomplish the goal of using social relatedness to nurture student interests, teacher education needs to make a shift toward developing the relational aspects of the profession in addition to the intellectual demands of teaching (Grossman & McDonald, 2008). Teachers need to learn to consider the subjective experience of the students in their classrooms

and provide a sense of "mere belonging" that can facilitate the development of interest in previously unvalued content (O'Keefe & Harackiewicz, 2017).

There is also a need for further research in the field in order to better understand how social relatedness and interest are related and how these two constructs intersect with achievement and motivation. On the academic side, researchers need to develop and rely on a discipline-wide standardized definition of interest to ensure that studies are uniformly measuring and recording the same phenomena. The field of interest research would also benefit from the validation of instruments or observational protocols for measuring the presence of interest in an individual at various phases of development. Recent developments in neuroscience provide an intriguing new avenue for the observation and measurement of interest development. Studies are emerging that empirically validate the key role of social and emotional components in the process of learning and interest development (Immordino-Yang, 2011).

In conclusion, Hidi and Renninger's (2006) four-phase model of interest development, explained through the framework of self-determination theory (Ryan & Deci, 2000) has the potential to drive the next wave of education reform with an emphasis on the importance of "whole child" and "social-emotional learning." The development of interest makes learning relevant even beyond the classroom and provides value to education beyond the quest for better test scores. In the words of Mihály Csíkszentmihályi (2008), "the value of a school does not depend on its prestige or ability to train students to face the necessities of life, but rather on the degree of enjoyment of lifelong learning that it can transmit" (p. 191).

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